Message

From: Laura Jensen [ljensen@rouxinc.com]
Sent: 8/21/2017 2:32:06 PM
To: Cirian, Mike [Cirian.Mike@epa.gov]
CC: John.Stroiazzo@glencore-ca.com; Steve Wright - CFAC [swright@cfaluminum.com]; Andrew Baris [abaris@rouxinc.com]; Roux IT [mritorto@rouxinc.com]; lidewitt@mt.gov; cowen@mt.gov; Hoogerheide, Roger [Hoogerheide.Roger@epa.gov]; Gunnar Emilsson [EmilssonGR@cdmsmith.com]
Subject: CFAC Phase I Site Characterization Round 3 Surface Water and Groundwater Sampling Results
Attachments: Round 3 Attachments.pdf

Flag: Follow up

Mr. Cirian,

The Scope of Work outlined in the Columbia Falls Aluminum Company, LLC (CFAC) Remedial Investigation / Feasibility Study (RI/FS) Work Plan and Phase I Site Characterization Sampling and Analysis Plan (Phase I SAP) includes four rounds of surface water and groundwater sampling. The results of the first round of sampling (Round 1), completed in September 2016, were provided in the Phase I Site Characterization Data Summary Report, submitted to EPA February 27, 2017. The results of the second round of sampling (Round 2), completed in December 2016, were provided in an e-mail to USEPA on April 13, 2017. As requested by EPA during the CFAC RI/FS project review conference call on March 2, 2017, this email provides a summary of the results for the Round 3 surface water and groundwater sampling event conducted in March and April 2017.

During Round 3, a total of 24 surface water samples were collected from Site surface water features and a total of 61 groundwater samples were collected from Site monitoring wells (48 monitoring wells screened in the upper hydrogeologic unit and 13 monitoring wells screened below the upper hydrogeologic unit). Select surface water and groundwater samples were analyzed for free cyanide via USEPA laboratory method 9016, in accordance with SAP Modification #9. Seven surface water sample locations and forty-four groundwater sample locations were selected for free cyanide analysis based on the sampling results of Round 1 and Round 2.

All the electronic data deliverable (EDD) laboratory reports were uploaded to the RI/FS project database upon receipt of the validated data (as described in the RI/FS Progress Reports) and are available for download by EPA. The results of the Round 3 sampling are summarized in the following tables and plates provided as attachments to this e-mail:

- Tables 1 through 6 summarize the Round 1, Round 2, and Round 3 surface water results;
- Tables 7 through 10 summarize the Round 1, Round 2, and Round 3 groundwater results;
- Plate 1 presents a map depicting groundwater elevations and flow directions from Round 3, March 14, 2017;
- Plates 2, 3, and 4 present thematic dot maps depicting surface water concentrations of total cyanide, free cyanide, and fluoride, respectively, from Rounds 1 through 3;
- Plates 5, 6, and 7 present thematic dot maps depicting groundwater concentrations of total cyanide, free cyanide, and fluoride, respectively, from Rounds 1 through 3;
- Plate 8 presents a map depicting the migration of total cyanide in groundwater from Rounds 1 through 3;
- Plate 9 presents a map depicting the concentrations of total cyanide and free cyanide in groundwater from Round 3; and
- Plate 10 presents a map depicting the migration of fluoride in groundwater from Rounds 1 through 3.

The potentiometric surface contour map from Round 3 (Plate 1) indicates that groundwater in the upper hydrogeologic unit flows towards the Flathead River and, overall, remains consistent with the flow direction observed during Round 1 that is described within Phase I Data Summary Report, and consistent with the flow direction observed during Round 2, as described in the April 13, 2017 e-mail to USEPA.

The Round 3 surface water and groundwater laboratory data (Tables 1 through 10) indicate the following about groundwater quality:

- Concentrations of total cyanide were detected in surface water but did not exceed the MDEQ Circular 7 (DEQ-7) Human Health Standards (Plate 2). Concentrations of total cyanide in Round 3 surface water from the Backwater Seep Sampling Area and Cedar Creek were typically an order of magnitude less than concentrations of total cyanide during Rounds 1 and 2. Concentrations of free cyanide were also detected in surface water from the Backwater Seep Sampling Area and South Percolation Pond but did not exceed the DEQ-7 Human Health Standards (Plate 3). Total and free cyanide were not detected in any of the samples collected downstream of the Backwater Seep Sampling Area (two locations) or in any samples from the main stem of the Flathead River.

- Consistent with Round 1 and 2 surface water sampling results, fluoride was detected in all Round 3 surface water samples at concentrations less than the EPA Maximum Contaminant Level (MCL) and DEQ-7 Human Health Standard (Plate 4).

- The highest concentrations of total cyanide in groundwater were observed in monitoring wells screened in the upper hydrogeologic unit near the West Landfill, Wet Scrubber Sludge Pond, Center Landfill, and Former Drum Storage Area (Plate 5). Concentrations decrease in a southerly direction from the landfill source area towards the Flathead River. Total cyanide was detected in 41 monitoring wells screened in the upper hydrogeologic unit. Free cyanide was detected in 23 monitoring wells screened in the upper hydrogeologic unit, with the majority of detections near the West Landfill, Wet Scrubber Sludge Pond, Former Drum Storage Area, and Main Plant Area. Only the groundwater sample collected at CFMW-002 in the Former Drum Storage Area (immediately west of the West Landfill) was detected at a concentration exceeding the EPA Maximum Contaminant Level (MCL) and DEQ-7 Human Health Standard of 200 µg/L (Plate 6). At all locations detected concentrations of free cyanide were less than detected concentrations of total cyanide. Free cyanide was not detected in groundwater from monitoring wells screened below the upper hydrogeologic unit. There are no detections of total or free cyanide in groundwater samples from monitoring wells immediately adjacent to Aluminum City.

- Fluoride was detected in groundwater from monitoring wells screened in the upper hydrogeologic unit at concentrations less than the EPA MCL and DEQ-7 Human Health Standard, with the exception of eight monitoring wells in the Northern Landfill Area (Plate 7). Fluoride was not detected at concentrations exceeding EPA MCL or DEQ-7 standards in groundwater from monitoring wells immediately adjacent to Aluminum city, or from monitoring wells screened below the upper hydrogeologic unit.

- The attached Plates 8, 9, and 10 compare the concentrations of total cyanide, free cyanide, and fluoride, respectively, in groundwater from Rounds 1, 2, and 3. Groundwater from the Central Landfill monitoring well, CFMW-017, was not sampled during Rounds 1 and 2 due to an insufficient volume of water in the well. The groundwater from monitoring well CFMW-017 was sampled during Round 3, and concentrations of total cyanide and total fluoride exceeded their respective EPA MCL and DEQ-7 Human Health Standards. Groundwater from CFMW-017 was not analyzed for free cyanide since it was not sampled during Rounds 1 and 2, but will be analyzed for free cyanide during the Round 4 groundwater sampling event. As previously stated, concentrations of total cyanide, free cyanide, and fluoride decrease in a southerly direction from the landfill source area towards the Flathead River.

As discussed with EPA, the results of the Round 4 sampling completed in June 2017 will be provided in a report summarizing the results of all four surface water and groundwater sampling events. The report will be provided to EPA in October 2017. Please feel free to reach out if you have any questions.

Laura Jensen | Project Hydrogeologist | Roux Associates, Inc.
209 Shafter Street, Islandia, New York 11749
Main: (631) 232-2600 | Direct: (631) 630-2358
Email: ljensen@rouxinc.com | Website: www.rouxinc.com

ROUX *Environmental Consulting & Management*

We solve our clients' most challenging environmental problems

California | Illinois | Massachusetts | New Jersey | New York | Texas

Please consider the environment before printing this email.